REMARKS/ARGUMENTS

In the Drawings

Applicants thank the Examiner for approving and entering the Replacement sheet of amended drawings submitted on September 19, 2005.

Claim Rejections - 35 USC § 103(a)

Claims 5-9 and 14-19 stand rejected under 35 USC § 103(a) as being unpatentable over Baldwin et al. (U.S. Pat. No. 6,608,521) ("'521 Patent") in view of Ben-Yaakov et al. (U.S. Pat. No. 6,728,121) ("'121 Patent").

According to the Action, the '521 Patent discloses all of the features of independent claims 5 and 14 except the use of a feedback loop to control the charging and discharging of the ramp waveform. In other words, the '521 Patent lacks the sensing of the output to control the slope(s) of the ramp waverform to form an error signal that controls the magnitude of the two current sources, I_{c1} and I_{D2}.

However, according to the Action, the '121 Patent discloses a "well known" conventional switch mode regulator system "that employs a pwm arrangement/method that the output of the power circuit can be sensed and compared to a set value and this in turn generates an error-amplified voltage (V_e) that is used to control the slope(s) of a ramp generator whose output is applied to a comparator COMP1. The output of the comparator would then form the pwm signal that is feedback to the power circuit and the output of the power circuit is then feedback to the means to control the slope of the

ramp generator thus completing the loop." According to the Action, it would have been obvious to one of ordinary skill in the art to combine the teachings of the '521 Patent with that of the '121 Patent.

In addition, the Action states that neither the '521 nor the '121 Patents disclose a "hysteretic comparator" but that the structure disclosed in these patents can be called a "hysteretic comparator" because the two comparators have "the inverting of one 58 connected to the non-inverting input terminal of the other and the other input terminals connected to a high and low reference voltages."

Applicants respectfully disagree and argue that the aforementioned references do not render the claims of the present invention obvious for the following reasons:

(1) The proposed circuit of the present invention is not disclosed or taught or suggested by the `521 Patent in view of the '121 Patent because the discharge current source in the provided ramp generator of the present invention is controlled by the error-amplified voltage so as to discharge the timing capacitor (see claims 5 and 14) whereas in the '121 Patent, the timing capacitor is discharged by the sharp pulses produced by a Clock (as described in column 4, lines 4-6 of the '121 Patent).

(2) The Action states that the `521 Patent discloses a ramp signal generator and a ramp signal generation method having a ramp generator that generates a ramp signal formed from timing capacitor $C_{T1}$ that is charged and discharged via two current sources $I_{c1}$, and $I_{D2}$ (see Fig. 3 of the `521 Patent). However, the `521 Patent lacks the sensing of the output to control the slope(s) of the ramp waveform to form an error signal that controls the magnitude of the two current sources noted above. Thus, the

`521 Patent could not disclose or teach or suggest the proposed circuit of the present invention because the configuration and the operational principles of the `521 Patent are different from those of the present invention.

(3) In the `121 Patent, a ramp generator included in a PWM modulator and built around a capacitor $C_{ramp}$, a current dependent source $G_1$, and a discharge switch $S_{ds}$, is described in column 3, lines 60-65, and shown in Fig. 4 of the `121 Patent. As mentioned above, the timing capacitor is discharged by the sharp pulses produced by the Clock (as described in column 4, lines 4-6 of the '121 Patent) instead of the discharge current source as claimed in claims 5 and 14 of the present invention. Thus, the `121 Patent could not disclose or teach or suggest the proposed circuit of the present invention because the configuration and the operational principles of `121 Patent are different from those of the present invention.

(4) Last, a primary advantage of the claimed circuit of the present invention over the prior art is that the lower the error-amplified voltage $V_{E/A}$, the higher the charge current and the lower the discharge current will be in the load decreasing condition because the controllable charge current source and controllable discharge current source are controlled by the value of the error-amplified voltage $V_{E/A}$. First, the rising time of the ramp signal will be shorter, the descending time will be longer, and the generated PWM signal features relatively a lower duty cycle and a lower frequency. Second, a power converter operates with relatively low ripple, low noise, and low standby loss (as described on Paragraph [0014], lines 1-8 and on Paragraph [0015], lines 1-3 of the specification of the present invention).

Therefore, the `521 Patent in view of the '121 Patent could not disclose or teach or suggest or obviate claims 5 and 14 of the present invention. See In re Vaeck, 947 F.2d 488, 493 (Fed. Cir. 1991) (In order to establish a prima facie case of obviousness, "[f]irst, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations").

From the above, it is clear that claim 5 and claim 14 (which is essentially the method corresponding to the apparatus of claim 5) of the present invention are not and could not be disclosed or taught or suggested or rendered obvious by the '521 Patent in view of the '121 Patent and therefore, claims 5 and 14 are allowable. Claims 6-9 and 15-19 depend from claims 5 and 14, respectively, and therefore, are also allowable.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned at the Examiner's convenience.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) and submit that the present application, including claims 5-9 and 14-19, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,
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